AMERICAN MUSEUM NOVITATES

Number 404 — Published by THE AMERICAN MUSEUM OF NATURAL HISTORY New York City — Feb. 28, 1930

59.57, 72 B

NEW SPECIES OF *LEPIDANTHRAX* AND *PARABOMBYLIUS* (BOMBYLIIDÆ, DIPTERA)

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During the identification of a number of Bombyliidæ it became necessary to revise the genera *Lepidanthrax* Osten Sacken and *Parabombylius* Williston in order to name satisfactorily the specimens in the collection. These revisions are presented here in the hope that they may prove of assistance to others when working over material in the two genera. While comparing specimens with types in the United States National Museum, additional specimens of some of the new species were located and these have been included in this paper. Unless otherwise stated, the specimens recorded are in The American Museum of Natural History.

LEPIDANTHRAX Osten Sacken

TABLE OF SPECIES

1. First posterior cell divided by a cross-vein....2.
   First posterior cell not divided....5.
2. White patch on the sides of the second abdominal segment composed of scales..3.
   White patch on second segment composed of hairs which are at most a little widened....*lutzi*, n. sp.
3. Third abdominal segment with pure white or silvery scales laterally....4.
   Third segment with tawny or orange scales laterally, wholly without white scales....*morna*, n. sp.
4. Sixth abdominal segment without white scales....*disjuncta* Wiedemann.
   Sixth segment with a silvery white cross-band....*indecisa*, n. sp.
5. Face black or brown except at the sides....6.
   Face reddish in ground color....8.
6. A brown spot extends across the first posterior cell between the apex of the first vein and base of the second posterior cell....7.
   First posterior cell hyaline on its whole length....*angulus* Osten Sacken.
7. Male with only the fifth segment silvery; face with dull tawny scales. *panamensis*, n. sp.
   Male with apical three segments silvery; face dull yellowish..*proboscidea* Loew.
8. Wings wholly hyaline....*hyalinipennis* Cole.
   At least furcation of the second and third veins clouded with brown; abdomen without black scales....9.
9. Costal border broadly brown for two-thirds its length....*lauta* Coquillett.
   Brown of the costal border broken into spots....10.

10. Front with black hairs at least on the upper half.....11.
Front entirely pale-haired.....*agrestis* Coquillett.
11. A brown cloud in the marginal cell in front of the fork of the third vein.
campestris Coquillett.
No brown cloud in front of the fork of the third vein.....*inauratus* Coquillett.

Lepidanthrax lutzi, new species

Related to *disjuncta* Wiedemann but there are no silvery scales on the abdomen and the white hair on the sides of the second segment is not scale-like. Length, 10 to 11 mm.

MALE.—Head black; yellowish-brown pollinose, the occiput below and the cheeks more grayish; hair black; scales of the face and front whitish yellow or white, pure white and dense along the orbits. Occipital scales whitish. Palpi long and slender, brown, black-haired. Antennæ black, the third segment onion-shaped.

Mesonotum with scale-like tomentum which is white on the anterior half and sides and tawny on the posterior half, hair sparse, black; along the anterior border there is a fringe of tawny pile, behind which is a broader black fringe produced broadly back on either side over the notopleura and upper edge of the mesopleura to the root of the wings; above the wings and immediately in front of the scutellum with white, tomentum-like pile and black bristly hairs. Between the humeri and squamæ a very conspicuous band of white pile extends along the upper border of the pleura; below this the pile is a mixture of tawny, whitish and black; infrasquamal pile mixed black and tawny except against the squamæ and contrasting sharply with the white fringes of the squamæ and suprasquamal tuft; on the sternopleura the tomentum is mostly tawny but partly white on the upper portion and there are white patches above the posterior coxæ and behind the posterior spiracle. Scutellum with tawny tomentum except basally and laterally where it is white and with sparse, erect black hairs and six pairs of black marginal bristles.

Legs reddish; coxæ black, their scales chiefly black. Femora with black scales, and especially above and below, with scattered white and tawny ones. The predominating scales on the tibiæ are pale, whitish and tawny with irregularly placed black ones. Tarsi black with the basal segment or more reddish. All the tibiæ with bristles; front claws long.

Wings hyaline and brown, the brown markings a little variable in extent and intensity. In the darker specimens the costal border is very broadly brown to the end of the marginal cell, being interrupted beyond the apex of the subcostal vein; the marginal cell is brown to opposite the apex of the subcostal vein except for an elongate clear spot near its basal third; the brown fills the whole of the first basal cell and broad base of the first submarginal and first posterior cells; it extends to somewhat beyond the apex of the second basal cell but is interrupted within this cell by a clear spot at the apical fourth; behind the second basal cell the brown color extends obliquely across the basal fifth of the anal cell and base of the auxilliary cell. The apical brown fascia is irregular in shape, narrow posteriorly where it forms a broad border to the vein closing the discal cell and enclosing a subhyaline spot in the end of the marginal cell. The posterior angulation of the discal cross-vein also bears a brown spot. In some specimens the oblique apical fascia may be broken to form four or five weakly connected spots. Squamæ white. Halteres blackish.

Abdomen black in ground color, variegated with black, tawny and white. First segment with a basal band of pale tawny pile, black pilose posteriorly and on the posterior border weakly fringed with whitish scales; the sides white pilose. Second segment white tomentose on the basal three-fifths and white pilose on the basal two-fifths of the lateral margin, the posterior two-fifths clothed with rather equally mixed black and tawny scales and on the sides with broad black scales predominating from dorsal view and tawny scales from ventral view. On the third, fourth, sixth, and seventh segments the tawny scales are more numerous than the black but toward either side of the third and fourth segments there is a transverse area in which the pale scales are almost or wholly lacking; these two segments each bear a pair of broad, basal white spots which are broadly separated from each other in the middle; fifth segment almost all white-scaled on more than the basal half; sixth and seventh segments fringed posteriorly with white scales except medianly and with a few white scales basally on either lateral margin. The lateral margins bear abundant black scales, the bases of the segments with tawny scales and often some white ones. The venter bears mostly tawny scales but there are white and black ones intermixed and the white ones predominate laterally on the second and third sternites; ventral scales longer than the dorsal ones.

FEMALE.—Differs chiefly in having the white-scaled band on the fifth segment much less conspicuous and interrupted on either side and the fifth to seventh segments each bear an apical tuft of suberect black scales in the middle. The hair on the sides of the second abdominal segment is a little more scale-like but the scales are quite narrow. The venter bears more whitish scales than in the male.

TYPES.—Holotype, male, Mud Springs, Santa Catalina Mts., Arizona, August 19, 1916, altitude about 6,500 ft., (F. E. Lutz), in American Museum of Natural History. Allotype, female, Rio Ruidoso, White Mountains, New Mexico, July 21, altitude about 6,500 ft., (C. H. T. Townsend). Paratype, male, same date as allotype. The New Mexico specimens are in the United States National Museum.

Lepidanthrax morna, new species

This species resembles *proboscidea* Loew in wing markings and in body coloration but lacks silvery scales on the sixth and seventh abdominal segments and has a crossvein bisecting the first posterior cell. Length, 6.5 to 9.5 mm.

MALE.—Head black, thinly brown pollinose, black-haired, the occiput with brownish yellow pile above; scales on the face, front and upper half of the occiput yellowish, on lower half of occiput white; face with a rectangle of black scales imme diately above the oral margin. Palpi and antennæ black.

Mesonotum white tomentose in front, tawny on more than the posterior half; the front margin with a fringe of dull yellowish pile which merges into a broader band of tawny which extends over the notopleura and includes the upper border of the pleura but does not reach to the base of the wings; behind the tawny band a white-haired band of more tomentum-like pile which extends back laterally to the base of the wings. Scutellum with tawny, scale-like tomentum, the sides and base whitish. A stripe of white pile extends along the pleura from the humeri to beneath the squamæ, the infrasquamal tuft mixed tawny and black except above; below the white band the pleural hair is almost all black; the scale-like tomentum is black except for a few yellowish scales on the sternopleura above and a patch of yellow scales behind the posterior spiracle. Scutellum with six or seven pairs of black marginal bristles.

The legs appear to be wholly black although the femora are brownish red in ground color; the scales are shiny black with only a few scattered reddish ones. Bristles of the tibiæ small; front claws long.

Wings hyaline, brown in front and spotted with brown. Costal and subcostal cells brown as far as the apex of the costal cell. The brown at the base of the wing covers the base of the auxilliary cell, base of anal cell, basal half of second basal cell and the first basal cell although in this cell it is very pale at the basal third and apical fourth; a dark brown spot surrounds the anterior cross-vein and extends over the fork of the third vein to join the brown of the costa; in the marginal cell there is a large brown spot at the middle. The other five brown spots are distributed as follows: a small one surrounding the posterior section of the discal cross-vein; a narrow cloud along the anterior section of this same vein; rectangular spot covering the supernumerary cross-vein; a spot covering the base of the anterior branch of the third vein and extending to the costa; and a small spot near the end of the second vein. Squamæ pale yellowish, with white fringe. Halteres blackish brown.

Abdomen black, considerably denuded dorsally. First segment with a broad basal band of yellowish pile and a narrow apical fascia of black hairs, the scattered scales yellowish. Second segment with a white-scaled fascia occupying more than the basal half, the posterior part mostly black-scaled, with scattered tawny ones. The third and fourth segments appear to have the black scales predominating basally, the tawny ones apically; fifth segment with a broad basal band of white scales at least on the lateral third; the yellow scales predominate on the sixth and seventh segments which have a white apical fringe except in the middle. The sides of the abdomen are densely black-scaled, the sides of the second segment white-scaled on the basal half, the bases of the third and fourth segments bear a few tawny scales; the white scales on the fifth segment are not visible from below. Venter black-scaled, with scattered metallic yellowish scales which are most numerous laterally.

FEMALE.—The abdomen evidently bears more tawny scales than in the case of the male.

TYPES.—Holotype, male, Kits Peak Rincon, Baboquivari Mts., Arizona, August 1–4, 1916, alt. about 4,050 ft. Allotype, female, Sycamore Canyon, Santa Catalina Mts., Arizona, August 20, 1916, (F. E. Lutz).

Lepidanthrax indecisa, new species

Related to *disjuncta* Wiedemann but the male is at once distinguished by the absence of silvery-white scales on the fourth abdominal segment and their presence on the sixth and seventh. The oblique apical wing fascia is narrow in front and does not extend along the costa to the anterior branch of the third vein. Length, 7 mm.

MALE.—Head black, brownish pollinose, hair wholly black; scales yellowish with some brown ones intermixed on the face and front, pale yellowish on the lower half of the occiput. The black patch immediately above the anterior oral margin appears to be more bristly than scaly. Palpi and antennæ black.

Mesonotum dull black, with yellowish, scale-like tomentum; in front with a narrow fringe of yellowish pile; the black collar is broad and extends broadly along the sides, encroaching upon the pleura, to the base of the wings. Behind the black band the pile is pale yellowish and extends back along the lateral margin, gradually merging into the tomentum. A narrow stripe of yellowish white pile extends from

beneath the humeri to the squamæ which bear a white fringe, the infrasquamal pile all black. The pleural pile is black but on the mesopleura and upper edge of the sternopleura there is considerable yellowish pile or tomentum and the spot behind the posterior spiracle is white.

Legs reddish in ground color, the coxæ and apical tarsal segments brown; coxæ with black vestiture. Femora with mostly black scales; tibiæ chiefly pale scaled above, black below. Bristles of front tibiæ moderately strong; front claws long.

The brown pattern of the wing is oblique; posteriorly it extends across the basal seventh of the auxilliary cell, basal fourth of anal cell, slightly obliquely and convexly from the basal sixth of the fourth posterior cell halfway across the discal cell, thence along the middle line of the discal cell almost to its middle; from this point it extends obliquely to the tip of the costal cell, being rectangularly cut off in each cell. The apical, oblique, brown fascia fills out the end of the marginal cell and extends backward to cover the vein at the base of the second posterior cell; a small brown spot covers the transverse vein at the base of the third posterior cell. Squamæ yellowish; supra-squamal tuft white. Halteres brown.

Abdomen variegated with scale-like tomentum and scales; in general the black scales appear to be greatly predominant on the apical half or more of the second, third fourth, and seventh segments, the deep yellowish scales being rather scattered, while there are white scales as follows: a broad fascia across the second segment; a narrow, probably medianly interrupted band on the base of the third segment; the fifth and sixth segments are silvery white and at least the sides of the seventh similarly colored. First segment yellow-haired on basal half or more, black-haired posteriorly and at least in the middle with long black scales. The lateral scales are wholly black from ventral view, but above there is a white patch on the sides of the second, third, fifth, sixth, and seventh segments. Venter with black and yellowish scales, the former predominating in the middle, the yellow ones laterally.

HOLOTYPE.—Male, Hacienda de la Imagen, Guerrero, Mexico, October, alt. 4000 ft., (H. H. Smith).

This specimen is one of those recorded under *disjuncta* Wiedemann in the 'Biologica Centrali Americani' and it is covered under Osten Sacken's remarks on that species. It differs in various ways from *disjuncta*, among others in having the anterior branch of the third vein joining the costa a great deal farther from the apex of the second vein.

Lepidanthrax panamensis, new species

Similar to *proboscidea* Loew but without silvery scales on the sixth and seventh abdominal segments of the male. Length, 6 to 9.5 mm.

MALE.—Head black, brownish pollinose, the sides of the face broadly reddish yellow in ground color; hair black, on the occiput yellowish white, broadly bordered with tawny above but black toward the vertex. Scales mostly tawny, a very few black ones on the front and face; those on the lower half of the posterior orbits rather yellowish; no tuft of black scales immediately above the oral margin. Palpi black, antennæ blackish, the basal two segments dull reddish, the second brown above.

Mesonotum dull blackish, with tawny tomentum, a fascia of yellowish white tomentum extends across the anterior fourth and curves backward laterally to reach

the root of the wings; anterior collar of pile tawny, sometimes becoming pale yellowish in front and almost white at the sides, posteriorly with scattered black hairs. Scutellum with a narrow basal band and the sides clothed with yellowish-white tomentum; with three or four pairs of marginal bristles. The band of whitish pile extending from the humeri over the upper part of the mesopleura does not reach the base of the wing and is often greatly reduced or yellowish in color and not strikingly differentiated from the tawny pile. The mesopleura bears some black hairs among the tawny ones, the sternopleura is black-haired and the hair on the anterior part of the propleura is black, the pleural pile otherwise tawny. The patch of scales behind the posterior spiracle is yellow.

The legs are evidently reddish, the tarsi except basally, and the coxæ black; coxæ with mostly black scales. The color of the femora varies; in some specimens the black scales predominate, in others pale orange, the latter color predominating on the tibiæ. Bristles of front tibæ fairly strong; anterior claws long.

Wings brown and hyaline; the brown color forms an irregular broad costal border from the base to the end of the subcostal vein and there are three additional spots. Posteriorly the brown area does not quite reach the posterior border at the base of the discal cell: it extends transversely across the basal sixth of the anal cell, across the base of the fourth posterior and discal cells but broadly interrupted in the second basal apically, then extends transversely across the basal sixth of the first posterior cell and base of first submarginal, and is almost transverse behind the apex of the subcostal vein to the posterior edge of the marginal cell. There is always a hyaline spot at the basal sixth of the marginal cell and sometimes another halfway between this and apical limit of the brown. Apically there is an oblique brown fascia extending from the costa over the vein at the apex of the second posterior cell; a spot on the apical section of the second vein, usually connected along the vein with the brown fascia, a small spot on the anterior branch of the third vein and another on the vein at the base of the fourth posterior cell. Squamæ yellowish, their fringe and the suprasquamal pile white. Halteres brownish.

The abdominal scales are mostly tawny. First segment with yellowish pile and tawny scales. Second segment with a medianly interrupted broad band of white scales; third usually with a pair of moderately interrupted, transverse basal spots of whitish scales; fifth segment silvery white except apically; second to fifth segments each with two patches of erect, black scales posteriorly; in addition, appressed black scales may form more or less fasciate spots but they are for the most part scattered and are practically absent on the sixth and seventh segments. The sides of the abdomen bear long, broad scales, most of which are black; sides of the second to fifth segments with white scales basally but these may not be conspicuous on the third and fourth segments and may be mixed with tawny. The venter bears metallic-black scales intermixed with tawny.

FEMALE.—A patch of black hair immediately above the anterior oral margin; fifth abdominal segment with the band of white, non-silvery scales interrupted in the middle and toward either side; the paired patches of erect black scales occurring on each segment except the first.

TYPES.—Ten specimens from Panama Canal Zone. Holotype, male, and allotype, female, Patilla Point, January 15, 1929. Paratypes: three males, Patilla Point, January 15 and February 1; one male, Corozal, January 21; three males and one female, Bruja Point, January 25, 1929, (C. H. Curran).

I have no female specimen of *proboscidea* so am unable to compare the two sexes of these species. The female of *disjuncta* has the seventh segment clothed with silvery scales.

PARABOMBYLIUS Williston

TABLE OF SPECIES

1. Abdomen with yellow pile in addition to the white spots.....2.
   Abdomen without yellow pile, but with several spots of white scales. *dolorosus* Williston.
2. Abdomen without black pile.....3.
   Abdomen with black pile.....4.
3. Halteres reddish.....*syndesmus* Coquillett.
   Halteres brown.....*ater* Coquillett.
4. Third abdominal segment with a large, oval patch of white scales toward either side, abdomen with black tomentum; face wholly black pilose. *vittatus*, n. sp.
   Third abdominal segment without white patch; abdomen with golden tomentum; face with golden tomentum and fine pile in addition to the black hairs.....*albopenicillatus* Bigot.

Parabombylius vittatus, new species

Allied to *albopenicillatus* Bigot but readily distinguished by the characters given in the table of species. Length, 5.5 mm.

FEMALE.—Head black; face and front black-haired, the latter golden tomentose; face above with a large patch of silvery-white hairs on either side. Occipital pile bright orange above, sparse and white below and on the cheeks. Palpi black. Antennæ black, black-haired, the third segment not haired apically, a little longer than the basal two segments combined but rather shorter than in *albopenicillatus*.

Mesonotum dull black, golden tomentose, the tomentum abundant anteriorly. There are four pure white vittæ composed of tomentum-like pile; two of these occupy the entire lateral margins and are quite broad; the median two are moderately wide and extend from the anterior margin to beyond the middle. The sparse pile is yellowish on the anterior half, black posteriorly and on the scutellum, the dorsal hairs on the scutellum very much finer than the five pairs of marginal bristles. Pleura black-haired; below the squamæ with white pile.

Legs black or brown; tibiæ reddish; anterior tibiæ with spicules; anterior claws moderately large.

Wings hyaline, the subcostal cell and base yellowish. First posterior cell closed in the wing margin or a little before.

Abdomen black; black pilose except the first segment which bears whitish pile; first segment, except medianly, with apical band of appressed, scale-like white tomentum; a large patch of similar color covers the entire sides of the fourth and fifth segments; toward either side of the third segment there is a patch of appressed, tomentum-like white scales and a smaller median patch on the tips of the second to sixth segments. The vestiture of the venter is wholly dark.

HOLOTYPE.—Female, Santa Cruz Village, Cobabi Mts., Arizona, August 10–12, 1916, alt. about 3,100 ft., (F. E. Lutz).